

**LOCAL MANUAL OPERATOR ACTION STEPS  
REVIEWED FOR ACHIEVING HOT STANDBY**

Summary of Number of Local Manual Action Steps to be Performed Outside of the Control Room to Achieve and Maintain Hot Standby

<u>Fire Area / Zone</u>	<u>Number of Manual Action Steps</u>		
	<u>Generic Steps in AOP-36 for All Fire Areas</u>	<u>Area Specific Steps in AOP-036 and Other Procedures Referenced by AOP-36</u>	<u>Total Steps by Fire Area/Zone</u>
1-A-BAL-B	10	29	39
1-A-BATB	10	14	24
1-A-EPA	10	14	24
1-A-ACP	10	45	55

Listing of AOP-036 Manual Action Steps Reviewed for Safe Shutdown Following a Fire

<b>AOP-36 Section 3.0 Actions (Generic Steps for All Fire Areas/Zones):</b>	
Step 12.c RNO	<p><b>MONITOR</b> AFW pump suction pressure indicators as an alternative to CST level indication: (Refer to Attachment 4, AFW Suction Pressure vs. CST level)</p> <ul style="list-style-type: none"> <li>• PI-2271 (at TDAFW Pump)</li> </ul>
Step 13.b(3)	<p><b>Locally PERFORM</b> the following (248' RAB):</p> <p>(a) <b>SHUT</b> 1CS-228, Normal Charging FCV Inlet Isolation Valve.</p> <p>(b) <b>THROTTLE</b> 1CS-227, Normal Charging FCV Bypass, as necessary to control charging flow.</p>
Step 13.c RNO	<p><b>ESTABLISH</b> flow through the Hi Head SI Line, as follows:</p> <p>(1).....(MCR action)</p> <p>(2).....(MCR action)</p> <p>(3) <b>OPEN ONE</b> of the following breakers:</p> <ul style="list-style-type: none"> <li>• 1B31-SB 4C, 1SI-3 BIT Outlet</li> <li>• 1A31-SA 4C, 1SI-4 BIT Outlet</li> </ul> <p>(4) <b>WHEN</b> directed by MCR, <b>THEN locally THROTTLE</b> the de-energized valve to maintain PRZ level:</p>

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	<ul style="list-style-type: none"> <li>• 1SI-3, BIT Outlet Isolation</li> <li>• 1SI-4, BIT Outlet Isolation</li> </ul>
Step14.b	<p><b>UNLOCK and SHUT</b> the affected manual block valve(s): (Steam Tunnel Platform El. 280)</p> <ul style="list-style-type: none"> <li>• 1MS-59, SG A PORV Manual Block</li> <li>• 1MS-61, SG B PORV Manual Block</li> <li>• 1MS-63, SG C PORV Manual Block</li> </ul>

<b>AOP-36 Attachment 1 (Area Specific) Actions For Fire Area 1-A-BATB:</b>	
Step 1	<p><b>IF</b> RHR suction valves spuriously open resulting in RWST drain down,  <b>THEN PERFORM</b> the following recommended actions, as required:</p>
Step 1.a	<p><b>ISOLATE</b> the Containment Recirc Sumps from the RWST, as follows:</p> <p>(1) <b>SHUT</b> the following valves:</p> <ul style="list-style-type: none"> <li>• 1SI-322, RWST To RHR Pump A-SA (RAB 286)</li> <li>• 1SI-323, RWST To RHR Pump B-SB (RAB 286)</li> </ul> <p>(2) <b>DE-ENERGIZE</b> the following valves:</p> <ul style="list-style-type: none"> <li>• 1SI-322 at breaker 1A31-SA-6E (RAB 286)</li> <li>• 1SI-323 at breaker 1B31-SB-6E (RAB 286)</li> </ul>
Step 1.b	<p><b>REFILL</b> the RWST with A RHR Pump, as follows:</p> <p>(1) <b>SHUT</b> 1SI-327, Low Head SI Train B to Hot Leg Crossover Isol Vlv.</p> <p>(2) <b>OPEN</b> the following valves to align RHR HX outlet flow to the RWST:</p> <ul style="list-style-type: none"> <li>• 1SI-448, Low Head SI Recirc to RWST Root Isol Vlv</li> <li>• 1SI-331, Low Head SI Recirc to RWST Isol Vlv</li> </ul> <p>(3) <b>USE</b> the RHR Pump as needed.</p>
Step 1.d	<p><b>WHEN</b> RHR Pumps are no longer required to fill the RWST,  <b>THEN:</b></p> <p>(1) <b>SHUT</b> the following valves to isolate RHR HX outlet flow from the RWST:</p> <ul style="list-style-type: none"> <li>• 1SI-448, Low Head SI Recirc to RWST Root Isol Vlv</li> <li>• 1SI-331, Low Head SI Recirc to RWST Isol Vlv</li> </ul> <p>(2) <b>OPEN</b> 1SI-327, Low Head SI Train B to Hot Leg Crossover Isol Vlv.</p>
Step 2	<p><b>PERFORM</b> the following to prevent spurious valve opening:</p>

Step 2.a	<b>VERIFY</b> the following valves are SHUT: <ul style="list-style-type: none"> <li>• 1SI-301, CV Sump 1B To RHR Pmp 1B-SB CIV (RAB 286)</li> <li>• 1SI-311, CV Sump 1B To RHR Pmp 1B-SB Downstrm Iso Vlv (RAB 286)</li> </ul>
Step 2.b	<b>DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-301 at breaker 1B21-SB-11B (RAB 286)</li> <li>• 1SI-311 at breaker 1B21-SB-7A (RAB 286)</li> </ul>

<b>AOP-36 Attachment 1 (Area Specific) Actions For Fire Area 1-A-EPA:</b>	
Step 7	<b>IF</b> RHR suction valves spuriously open resulting in RWST drain down, <b>THEN PERFORM</b> the following recommended actions, as required:
Step 7.a	<b>ISOLATE</b> the Containment Recirc Sumps from the RWST, as follows: <ol style="list-style-type: none"> <li>(1) <b>SHUT</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-322, RWST To RHR Pump A-SA (RAB 286)</li> <li>• 1SI-323, RWST To RHR Pump B-SB (RAB 286)</li> </ul> </li> <li>(2) <b>DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-322 at breaker 1A31-SA-6E (RAB 286)</li> <li>• 1SI-323 at breaker 1B31-SB-6E (RAB 286)</li> </ul> </li> </ol>
Step 7.b	<b>REFILL</b> the RWST with B RHR Pump, as follows: <ol style="list-style-type: none"> <li>(1) <b>SHUT</b> 1SI-326, Low Head SI Train A to Hot Leg Cross-over Isol Vlv.</li> <li>(2) <b>OPEN</b> the following valves to align RHR HX outlet flow to the RWST: <ul style="list-style-type: none"> <li>• 1SI-448, Low Head SI Recirc to RWST Root Isol Vlv</li> <li>• 1SI-331, Low Head SI Recirc to RWST Isol Vlv</li> </ul> </li> <li>(3) <b>USE</b> the RHR Pump as needed.</li> </ol>
Step 7.c	<b>IF</b> charging is required in the interim, <b>THEN USE</b> the Boric Acid Tanks.
Step 7.d	<b>WHEN</b> RHR Pumps are no longer required to fill the RWST, <b>THEN:</b> <ol style="list-style-type: none"> <li>(1) <b>SHUT</b> the following valves to isolate RHR HX outlet flow from the RWST: <ul style="list-style-type: none"> <li>• 1SI-448, Low Head SI Recirc to RWST Root Isol Vlv</li> <li>• 1SI-331, Low Head SI Recirc to RWST Isol Vlv</li> </ul> </li> <li>(2) <b>OPEN</b> 1SI-326, Low Head SI Train A to Hot Leg Cross-over Isol Vlv.</li> </ol>

Step 8	<b>PERFORM</b> the following to prevent spurious valve opening:
Step 8.a	<b>VERIFY</b> the following valves are SHUT: <ul style="list-style-type: none"> <li>• 1SI-300, CV Sump 1A To RHR Pmp 1A-SA CIV (RAB 286)</li> <li>• 1SI-310, CV Sump 1A To RHR Pmp 1A-SA Downstrm Iso Vlv (RAB 286)</li> </ul>
Step 8.b	<b>DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-300 at breaker 1A21-SA-7C (RAB 286)</li> <li>• 1SI-310 at breaker 1A21-SA-9B (RAB 286)</li> </ul>

<b>AOP-36 Attachment 1 (Area Specific) Actions for Fire Area 1-A-BAL:</b>	
Step 1	<b>PERFORM</b> the following to prevent spurious valve operations:
Step 1.a	<b>VERIFY</b> the following valves are OPEN <ul style="list-style-type: none"> <li>• 1CS-214, Charging/SI Pumps Miniflow Isol (RAB 236 near Boric Acid Pumps)</li> <li>• 1CS-169, CSIP Suction Header Xconn (RAB 247 above CSIPs)</li> <li>• 1CS-218, CSIP Discharge Header Xconn (RAB 247 above CSIPs)</li> <li>• 1CC-252, CCW From RCP Thermal Barrier FCV (RAB 236 Scalloped Area)</li> </ul>
Step 1.b	<b>DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1CS-214 at breaker 1A35-SA-4C (RAB 261)</li> <li>• 1CS-169 at breaker 1A35-SA-4B (RAB 261)</li> <li>• 1CS-218 at breaker 1B35-SB-14D (RAB 261)</li> <li>• 1CC-252 at breaker 1E12-6B (RAB 261)</li> </ul>
Step 5	<p style="text-align: center;"><b>CAUTION</b></p> <ul style="list-style-type: none"> <li>• The following step will inhibit all automatic and manual safeguards functions since a fire in this area could cause spurious actuations as well as disable controls for resetting SI.</li> <li>• Removal of Output Relay Power Fuses from both trains of SSPS will generate a Reactor Trip signal. The Reactor should be shut down prior to performing the following step.</li> </ul>

	<p><b>OBTAIN SSPS Key 96</b>  <b>AND DEFEAT</b> both trains of SSPS by removing the listed fuses in the front of the listed SSPS Output Cabinets:</p> <ul style="list-style-type: none"> <li>• Train A, Output Cabinet No. 1, Output Relay Power fuses</li> <li>• Train A, Output Cabinet No. 2, fuses 61 and 62</li> <li>• Train B, Output Cabinet No. 1, Output Relay Power fuses</li> <li>• Train B, Output Cabinet No. 2, fuses 61 and 62</li> </ul>
Step 20	<p><b>IF</b> the following valves cannot be shut due to fire damage to their control cables,</p> <ul style="list-style-type: none"> <li>• 1CS-165, VCT Outlet/Dilution FCV (1-LCV-115C)</li> <li>• 1CS-166, VCT Outlet (1-LCV-115E)</li> </ul> <p><b>THEN:</b></p>
Step 20.a	<b>STOP ALL CSIPs.</b>
Step 20.b	<p><b>SHUT EITHER</b> of the following valves:</p> <ul style="list-style-type: none"> <li>• 1CS-170, A CSIP Suction X-conn</li> <li>• 1CS-168, C CSIP Suction X-conn with A CSIP</li> </ul>
Step 20.c	<p><b>SHUT EITHER</b> of the following valves:</p> <ul style="list-style-type: none"> <li>• 1CS-169, C CSIP Suction X-conn with B CSIP</li> <li>• 1CS-171, B CSIP Suction X-conn</li> </ul>
Step 20.d	<b>VERIFY SHUT 1CS-214, Charging/SI Pumps Miniflow Isol.</b>
Step 21	<p><b>IF BOTH</b> of the following occur due to fire damage to their control cables:</p> <ul style="list-style-type: none"> <li>• 1SW-270, ESW Header A Return to Aux Reservoir, spuriously SHUTS</li> <li>• 1SW-276, ESW to NSW Discharge HDR, spuriously OPENS</li> </ul> <p><b>THEN ALIGN</b> flow to the cooling tower, as follows:</p>
Step 21.a	<b>VERIFY OPEN 1SW-275, ESW Return Header A to NSW.</b>
Step 21.b	<p><b>WHEN</b> time permits,  <b>THEN:</b></p> <ol style="list-style-type: none"> <li>(1) <b>DE-ENERGIZE</b> 1SW-270, ESW Header A Return to Aux Reservoir, at breaker 1A35-SA-9C (RAB 261).</li> <li>(2) <b>OPEN</b> 1SW-270 locally (RAB 261).</li> <li>(3) <b>WHEN</b> 1SW-270 is open,</li> </ol> <p><b>THEN SHUT</b> 1SW-276, ESW to NSW Discharge Hdr.</p>

Step 22	<b>IF BOTH 1SW-270 AND 1SW-276 shut, THEN CROSS-CONNECT ESW Discharge Headers as follows:</b>
Step 22.a	<b>VERIFY OPEN 1SW-274, ESW Return Header B to NSW.</b>
Step 22.b	<b>VERIFY OPEN 1SW-275, ESW Return Header A to NSW.</b>
Step 22.c	<b>VERIFY OPEN 1SW-271, ESW Header B Return to Aux Reservoir.</b>
Step 22.d	<b>WHEN time permits, THEN:</b> <b>(1) DE-ENERGIZE 1SW-270, ESW Header A Return to Aux Reservoir, at breaker 1A35-SA-9C (RAB 261).</b> <b>(2) OPEN 1SW-270 locally (RAB 261).</b> <b>(3) WHEN 1SW-270 has been opened, THEN SHUT 1SW-274, ESW Return Header B to NSW.</b>

<b>AOP-36 Attachment 1 (Area Specific) Actions for Fire Area 1-A-ACP:</b>		
Step 1b	<b>SECURE Rod Drive MG sets using OP-104, Rod Control System</b>	
	<u>OP-104 Step Number</u>	<u>Description</u>
	7.3.2.02	Place GENERATOR CIRCUIT BREAKER CONTROL switch 1A to TRIP
	7.3.2.03	Place MOTOR CIRCUIT BREAKER CONTROL switch 1A to TRIP
	7.3.2.04	Open Reactor Trip Breakers, if not already open.
	7.3.2.05	Place GENERATOR CIRCUIT BREAKER CONTROL switch 1B to TRIP
		Place MOTOR CIRCUIT BREAKER CONTROL switch 1B to TRIP
Step 2	<b>If BOTH MDAFW pumps are disabled, THEN:</b>	

Step 2c	Obtain a transfer panel key 33, 34, 35, 36, 99 or 106 (MCR or ACP key locker)...	
	... and de-energize the TDAFW Pump Trip and Throttle Valve by removing fuses 1A-11/1976 and 1A-12/1976	
Step 2d	De-energize 1MS-70 by opening disconnect switch on DP-1A2-SA-2B.	
Step 2f	IF TDAFW Pump is NOT operating properly, THEN locally...	
	...VERIFY OPEN TDAFW Pump Trip and Throttle Valve	
	...VERIFY OPEN 1MS-70, Main Steam B to Aux FW Turbine	
Step 2g	IF MCB CST level indication is NOT available,	
	THEN locally monitor AFW pump suction pressure using Attachment 4.	
Step 4	REMOVE the fuse for 1BD-30 SA at panel ARP-19A	
	REMOVE the fuse for 1BD-49 SA at panel ARP-19A	
Step 6	OPEN the power supply breaker for 1CS-235 at breaker 1B31-SB-10A	
Step 7	ISOLATE AND VENT IA to 1CH-279	
Step 7a	SHUT "1IA-871-I1"	
Step 7b	OPEN air filter drain petcocks on Instrument Air Filter	
Step 7c	CHECK 1CH-279, AH-12 1ASA valve OPEN	
Step 8	OPEN the power supply breaker for 1CS-171 at breaker 1B35-SB-4D	
Step 9	Locally VERIFY OPEN 1CS-171, B CSIP Suction X-Conn valve	
	Locally VERIFY OPEN 1CS-235, Charging Line Isolation valve	
Step 10	Locally verify shut 1BD-30, SG 1B Blowdown Isolation valve	
	Locally verify shut 1BD-49, SG 1C Blowdown Isolation valve	
Step 13	IF SG C PORV cycles erroneously, THEN:	
Step 13c	IF SG C PORV manual/automatic station does <u>not</u> function properly,	
	THEN locally OPERATE SG C PORV using OP-126 for desired cooldown rate.	
	OP-126 Step Number	Description
	8.2.1.2.01	Obtain pliers, flashlight, head set, extension cord

	8.2.1.2.02	Open Servo Valve Solenoid feeder breaker PP-1A312-SA-3
		Open Servo Valve Solenoid feeder breaker PP-1B312-SB-3
		Open Servo Valve Solenoid feeder breaker IDP-1A-SIII-11
	8.2.1.2.03	Remove the cover from the side of the PORV
	8.2.1.2.04	Establish communications with the Control Room
	8.2.1.2.07	To throttle open the PORV,
	8.2.1.2.07a	Rotate Solenoid B manual override approximately 3/4 turn in the clockwise direction
	8.2.1.2.07b	As directed by the Control Room, slowly rotate Solenoid A manual override approximately 3/4 turn in the clockwise direction
	8.2.1.2.07c	When the PORV is at its desired position, place Solenoid A manual override back to its original position
	8.2.1.2.08	To partially shut the PORV,
	8.2.1.2.08a	Check Solenoid A manual override in the fully counterclockwise position.
	8.2.1.2.08b	As directed by the Control Room slowly rotate Solenoid B manual override to its original position by rotating it approximately 3/4 turn in the counterclockwise direction, until the PORV starts to shut.
	8.2.1.2.08c	When the PORV is at the desired position, rotate Solenoid B manual override approximately 3/4 turn in the clockwise direction.
Step 14	IF FCV-2071C, Aux FW C Regulator 1AF-131, spuriously CLOSES, THEN	
Step 14a	REMOVE fuse 1A-5/1952 at Transfer Panel 1B	
Step 14b	THROTTLE 1AF-149, Stm Turb Aux FW C Isolation, to maintain SG C level	

<b>AOP-36 Attachment 2 Actions For SSD 1 Equipment Powered by SSD 2:</b>	
Step 2	IF control power is lost to 1CS-231, Charging Flow controller, THEN PERFORM the following locally:



Step 2.a	<b>SHUT 1CS-228, Normal Charging FCV Inlet Isolation Valve.</b>
Step 2.b	<b>MAINTAIN 25% to 60% PRZ level (charging flow) using 1CS-227, Normal Charging FCV Bypass.</b>

<b>AOP-36 Attachment 3 Actions For SSD 2 Equipment Powered by SSD 1:</b>	
	This attachment was reviewed but contained no hot standby local manual operator actions.

**LOCAL MANUAL OPERATOR ACTION STEPS  
REVIEWED FOR ACHIEVING COLD SHUTDOWN**

<b>AOP-36 Attachment 1 (Area Specific) Actions for Fire Area 1-A-EPA:</b>	
Step 4.b	<b>WHEN</b> manpower is available, <b>THEN:</b> <b>(1) DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-246, SI Accumulator A Discharge, at breaker 1A21-SA-5C</li> <li>• 1SI-248, SI Accumulator C Discharge, at breaker 1A21-SA-3D</li> </ul>

<b>Attachment 2, SSD 1 Equipment Powered by SSD 2:</b>	
Step 6	<b>IF 1RH-30, RHR Heat Xchg A Out Flow Cont, OR 1RH-20, RHR Hx Xchg A Byp Flow Cont, cannot be controlled due to loss of control power, THEN:</b>
Step 6.a	<b>ISOLATE 1RH-20 air supply, 1IA-128-I2, to cause it to fail closed.</b>
Step 6.d	<b>VERIFY RHR is cooling the RCS by trending temperature using ONE of the following methods:</b> <ul style="list-style-type: none"> <li>• .....(MCR action)</li> <li>• Local temperature indication TI-5551A (RHR Heat Exchanger Outlet)</li> </ul>

**MANUAL ACTIONS DESCRIBED IN AOP-036  
WITHOUT REQUIRED EMERGENCY LIGHTING**

**AOP-36, Section 3.0, for All Fire Areas**

<u>Step #</u>	<u>Description</u>
13.a(7)	Open 1CS-526, BA Tk Supply to CSIP Isol. Vlv.

**AOP-36, Attachment 1, for Fire Area 1-A-ACP**

<u>Step #</u>	<u>Description</u>
1.b	Secure Rod Drive MG sets using OP-104, Rod Control System
2.c	Obtain a transfer panel key 33, 34, 35, 36, 99 or 106 (MCR or ACP key locker) and de-energize the TDAFW Pump Trip and Throttle Valve by removing 2 fuses
2.d	De-energize 1MS-70 by opening disconnect switch on DP-1A2-SA-2B.
2.f	Locally verify open TDAFW Pump Trip and Throttle Valve and 1MS-70, Main Steam B to Aux FW Turbine
2.g	Locally monitor AFW pump suction pressure
4	Remove the fuses for 1BD-30 SA and 1BD-49 SA at panel ARP-19A
6	Open the power supply breaker for 1CS-235 at breaker 1B31-SB-10A
9	Locally verify open 1CS-235
14.a	Remove fuse 1A-5/1952 at Transfer Panel 1B

**AOP-36, Attachment 1, for Fire Area 1-A-BATB**

<u>Step #</u>	<u>Description</u>
1.b(1)	Shut 1SI-327, Low Head SI Train B to Hot Leg Crossover Isol. Vlv.
1.d(2)	Open 1SI-327, Low Head SI Train B to Hot Leg Crossover Isol. Vlv.

**AOP-36, Attachment 1, for Fire Area 1-A-EPA**

<u>Step #</u>	<u>Description</u>
7.b(1)	Shut 1SI-326, Low Head SI Train A to Hot Leg Crossover Isol. Vlv.
7.d(2)	Open 1SI-326, Low Head SI Train A to Hot Leg Crossover Isol. Vlv.

## AOP-36, Attachment 1, for Fire Area 1-A-BAL SSA Area 1-A-BAL-B

<u>Step #</u>	<u>Description</u>
21.b(2)	Open 1SW-270 locally (RAB 261).
22.c	Verify open 1SW-271, ESW Header B Return to Aux. Reservoir.
22.d(2)	Open 1SW-270 locally (RAB 261). (Same as step 21.b(2) above but for different plant conditions.)

**MANUAL ACTIONS DESCRIBED IN AOP-036  
WITHOUT REQUIRED BATTERY-BACKED EMERGENCY LIGHTING  
BUT WITH DIESEL-POWERED FLOURESCENT LIGHTING**

## AOP-36, Section 3.0, for All Fire Areas

<u>Step #</u>	<u>Description</u>
12.c RNO	Monitor AFW pump suction pressure indicators as an alternative to CST level indication: (Refer to Attachment 4, AFW Suction Pressure vs. CST level) <ul style="list-style-type: none"> <li>• PI-2271 (at TDAFW Pump)</li> </ul>
13.b(3)	(a) Shut 1CS-228, Normal Charging FCV Inlet Isolation Valve. (b) Throttle 1CS-227, Normal Charging FCV Bypass, as necessary to control charging flow.
13.c RNO	(3) Open one of the following breakers: <ul style="list-style-type: none"> <li>• 1B31-SB-4C, 1SI-3 BIT Outlet</li> <li>• 1A31-SA-4C, 1SI-4 BIT Outlet</li> </ul>
13.c RNO	When directed by MCR, then locally throttle the de-energized valve to maintain PRZ level: <ul style="list-style-type: none"> <li>• 1SI-3, BIT Outlet Isolation</li> <li>• 1SI-4, BIT Outlet Isolation</li> </ul>

## AOP-36, Attachment 1, for Fire Area 1-A-ACP

<u>Step #</u>	<u>Description</u>
1.b	Secure rod drive MG sets using OP-104
2.c	Obtain a transfer panel key 33, 34, 35, 36, 99 or 106 (MCR or ACP key locker) and de-energize the TDAFW Pump Trip and Throttle Valve by removing 2 fuses

2.f	Locally verify open TDAFW pump trip and throttle valve & 1MS-70
2.g	Locally monitor AFW pump suction pressure
4	Remove the fuses for 1BD-30 SA and 1BD-49 SA at panel ARP-19A

**AOP-36, Attachment 1, for Fire Area 1-A-BATB**

<u>Step #</u>	<u>Description</u>
1.a(2)	<b>(2) DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-322 at breaker 1A31-SA-6E (RAB 286)</li> <li>• 1SI-323 at breaker 1B31-SB-6E (RAB 286)</li> </ul>
1.b(2)	<b>(2) OPEN</b> the following valves to align RHR HX outlet flow to the RWST: <ul style="list-style-type: none"> <li>• 1SI-448, Low Head SI Recirc to RWST Root Isol. Vlv</li> <li>• 1SI-331, Low Head SI Recirc to RWST Isol. Vlv</li> </ul>
1.d(1)	<b>(1) SHUT</b> the following valves to isolate RHR HX outlet flow from the RWST: <ul style="list-style-type: none"> <li>• 1SI-448, Low Head SI Recirc to RWST Root Isol. Vlv</li> <li>• 1SI-331, Low Head SI Recirc to RWST Isol. Vlv</li> </ul>

**AOP-36, Attachment 1, for Fire Area 1-A-EPA**

<u>Step #</u>	<u>Description</u>
4.b(1)	<b>DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-246, SI Accumulator A Discharge, at breaker 1A21-SA-5C</li> <li>• 1SI-248, SI Accumulator C Discharge, at breaker 1A21-SA-3D</li> </ul>
7.a(2)	<b>(2) DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-322 at breaker 1A31-SA-6E (RAB 286)</li> <li>• 1SI-323 at breaker 1B31-SB-6E (RAB 286)</li> </ul>
7.b(2)	<b>(2) OPEN</b> the following valves to align RHR HX outlet flow to the RWST: <ul style="list-style-type: none"> <li>• 1SI-448, Low Head SI Recirc to RWST Root Isol. Vlv</li> <li>• 1SI-331, Low Head SI Recirc to RWST Isol. Vlv</li> </ul>
7.d(1)	<b>(1) SHUT</b> the following valves to isolate RHR HX outlet flow from the RWST: <ul style="list-style-type: none"> <li>• 1SI-448, Low Head SI Recirc to RWST Root Isol. Vlv</li> <li>• 1SI-331, Low Head SI Recirc to RWST Isol. Vlv</li> </ul>

## AOP-36, Attachment 1, for Fire Area 1-A-BAL-B

<u>Step #</u>	<u>Description</u>
1.a	<b>VERIFY</b> the following valves are OPEN <ul style="list-style-type: none"> <li>• 1CS-214, Charging/SI Pumps Miniflow Isol. (RAB 236 near Boric Acid Pumps)</li> <li>• 1CS-169, CSIP Suction Header Xconn (RAB 247 above CSIPs)</li> <li>• 1CS-218, CSIP Discharge Header Xconn (RAB 247 above CSIPs)</li> </ul>
5	<b>OBTAIN</b> SSPS Key 96 <b>AND DEFEAT</b> both trains of SSPS by removing the listed fuses in the front of the listed SSPS Output Cabinets: <ul style="list-style-type: none"> <li>• Train A, Output Cabinet No. 1, Output Relay Power fuses</li> <li>• Train A, Output Cabinet No. 2, fuses 61 and 62</li> <li>• Train B, Output Cabinet No. 1, Output Relay Power fuses</li> <li>• Train B, Output Cabinet No. 2, fuses 61 and 62</li> </ul>
16.b(1)	<b>DE-ENERGIZE</b> the following valves: <ul style="list-style-type: none"> <li>• 1SI-246, SI Accumulator A Discharge, at breaker 1A21-SA-5C (RAB 286)</li> <li>• 1SI-247, SI Accumulator B Discharge, at breaker 1B21-SB-5C (RAB 286)</li> <li>• 1SI-248, SI Accumulator C Discharge, at breaker 1A21-SA-3D (RAB 286)</li> </ul>
22.a	<b>VERIFY OPEN</b> 1SW-274, ESW Return Header B to NSW.
22.d(3)	<b>WHEN</b> 1SW-270 has been opened, <b>THEN SHUT</b> 1SW-274, ESW Return Header B to NSW.

## AOP-36, Attachment 2, Safe Shutdown 1 Equipment Powered by Safe Shutdown 2

<u>Step #</u>	<u>Description</u>
2	<b>IF</b> control power is lost to 1CS-231, Charging Flow controller, <b>THEN PERFORM</b> the following locally: <ol style="list-style-type: none"> <li><b>SHUT</b> 1CS-228, Normal Charging FCV Inlet Isolation Valve.</li> <li><b>MAINTAIN</b> 25% to 60% PRZ level (charging flow) using 1CS-227, Normal Charging FCV Bypass.</li> </ol>
6.a	<b>ISOLATE</b> 1RH-20 air supply, 1IA-128-I2, to cause it to fail closed.
6.d	<b>VERIFY</b> RHR is cooling the RCS by trending temperature using <b>ONE</b> of the following methods: <ul style="list-style-type: none"> <li>• Local temperature indication TI-5551A (RHR Heat Exchanger Outlet)</li> </ul>

**AOP-36, Attachment 3, Safe Shutdown 2 Equipment Powered by Safe Shutdown 1**

<u>Step #</u>	<u>Description</u>
4.b	(1) <b>OPEN</b> feeder breaker 1A21-SA-5C, Accum 1A-SA Disch Iso (RAB 286). (2) <b>OPEN</b> feeder breaker 1A21-SA-3D, Accum 1C-SA Disch Iso (RAB 286).
6.d	<b>VERIFY</b> RHR is cooling the RCS by trending temperature using ONE of the following methods: <ul style="list-style-type: none"><li>• Local temperature indication TI-5551A (RHR Heat Exchanger Outlet)</li></ul>